

Hammermill
Waste Disposal Well #2

INDUSTRIAL WASTES
HAMMERMILL PAPER COMPANY
INTERGRATED PULP AND PAPER MILL
CITY OF ERIE, ERIE COUNTY
APPLICATION NO. 36515

June 17, 1965

APPLICANT: Mailing Address -
Hammermill Paper Company
P. O. Box 1440
Erie, Pennsylvania 16512

Future Correspondence to -
Mr. Donald T. Jackson, Vice President

DESCRIPTION OF PROJECT: The operation of a second deep well and associated pretreatment facilities for the disposal of liquid wastes from the company's pulping operation.

PLANS: (Well logs) 8 sheets

REPORT: 1 volume

SPECIFICATIONS: None

DESIGN ENGINEER: K. C. Newenfeldt, Pa. R.P.E.

RELEVANT SANITARY WATER BOARD PERMITS AND ORDERS: August 14, 1963, Permit No. 363110 was issued approving deep well disposal of pulping liquors.

April 18, 1962, an application was received proposing the installation of a pipeline into Lake Erie as a temporary solution to the oxygen depletion problem in the immediate Lake waters. This application was denied.

March 5, 1962, a schedule for compliance was submitted and is included as part of application No. 36212.

August 29, 1961, ordered to provide complete treatment of their wastes or abate the discharge by September 1, 1963. Also ordered to submit a schedule for compliance within 90 days to the Region III office.

May 29, 1961, Application No. 361-I-4 requesting approval of the extension of their combined pulp mill effluent line some 2500 feet out into Lake Erie. This request was disapproved or denied by the Sanitary Water Board on July 18, 1961.

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July 23, 1952, Permit No. 1554 was issued approving plans for an additional settling unit. This unit has been constructed.

September 19, 1950, Permit No. 1349 was issued approving treatment works for primary treatment of wood room effluent. This treatment works has been constructed.

March 11, 1949, a permit was issued in response to application No. 9645 for treatment of approximately one-half of the paper-mill wastes but does not apply to the sulfite mill wastes nor the wood room wastes. This treatment works has been constructed.

February 28, 1946, ordered to abate discharges on or before September 1, 1946, or submit to the Sanitary Water Board, for approval, a report upon and detail construction plans for works to provide complete treatment of wastes.

GENERAL CONDITIONS:

Location - On the east side of the City of Erie north of East Lake Road.

Type of Industry - Intergrated pulp and paper mill.

Sanitary Facilities - discharged to City of Erie sanitary sewer system.

Water Supply -

Industrial - Lake Erie and the City of Erie water supply system.

Domestic - City of Erie water supply system.

Plant Operation - 24 hrs/day, 7 days/week, 52 wks/yr.

Proof of Publication - Received in the Region III Office on April 22, 1965.

OPERATIONS PRODUCING WASTE: Figures obtained from Mr. Sheppard T. Powell's report dated December 15, 1960.

Source of Waste	Flow MGD	Suspended Solids Tons/day	Median Values of Setttable Solids cc/liter	5 day B.O.D. Tons/day	Population Equivalent B.O.D. Basis
Wood Room	0.55	1.1	13.0	0.37	4,400
Pulp Mill	20.30	18.3	12.0	51.80	620,000
Paper Mill	6.20	2.8	0.3	4.43	53,000

The waste to be disposed of under this application is a portion of that originating in the pulp mill. Approximately 2 mgd of the 20.3 mgd originating in the pulp mill is termed "Spent Pulping Liquor." Most of the pollution from this mill is concentrated in this 2 mgd.

The company presently produces pulp by three different methods:

- 1) Neutracerol - continuous - 150 tons/day
batch - 125 tons/day
- 2) Conifracel - batch - 100 tons/day

The conifracel process is being converted to the batch Neutracerol process. This conversion will be completed by the early part of 1966. Presently, none of the liquor from this process is collected as mixing the liquors from the two different processes will cause a precipitate and probable plugging of the deep wells.

The 2 mgd of highly concentrated waste is the drainage from the pulping operation. Approximately 85% of the liquor from the Neutracerol batch process and 50% to 60% of the liquor from the Neutracerol continuous process is collected.

The other 18.3 mgd is from the bleaching portion of the pulping operation.

EXISTING INDUSTRIAL WASTE TREATMENT FACILITIES:

Wood Room Effluent - The wash water is screened to remove solids and either reused or discharged to the paper mill sedimentation tanks. The treated waste is then discharged to Lake Erie.

✓ Pulp Mill Effluent - Approximately 350 gpm of the waste from the pulping operation (spent sulfite liquor) is disposed of by deep well disposal. Pretreatment of this waste is by pressure diatomaceous filter. The remaining portion of the waste is not treated and is discharged to Lake Erie. This is the 18.3 mgd above.

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Paper Mill Effluent - The paper mill waste is first passed through savealls, then through screens and then into two 100,000 gallon sedimentation tanks. The treated waste is then discharged to Lake Erie.

PROPOSED INDUSTRIAL WASTE TREATMENT FACILITIES: The company proposed to dispose of the remainder of the Spent Sulfite Liquor by deep well disposal.

The following is a summary of the existing and proposed deep well disposal facilities:

- 1) Storage tanks
 - A) 2 @ 50,000 gals. each for spent Sulfite Liquor from continuous Neutracerol process.
 - B) 6 @ 100,000 gals. each for spent Sulfite Liquor from batch Neutracerol process.
- 2) Rotating Leaf Pressure Diatomaceous Earth filters.
3 @ 500 gpm each.

A continuous body feed and precoating of the filters will be used.

- 3) Surge Tank
1 @ 100,000 gallons
- 4) Trap filters - 2 cartridge type
- 5) 5 injection pumps
 - Well No. 1
Capacity: 194 gpm each
Type: 2 - positive displacement triplex single stage pumps.
 - Well No. 2
Type: 3 - positive displacement triplex single stage pumps.
Capacity: 277 gpm each.

- 6) 2 deep wells
 - Well No. 1
Receiving Formation: Bass Island Limestone formation.
Depth: 1620' to 1670'
Injection Rate: 700 gpm @ 1350 psig
 - Well No. 2
Receiving Formation: Bass Island Limestone formation and the Cambrian formation (Mt. Simon).
Depth: 1620' to 1710' - Bass Island
5914' to 5929' - Mt. Simon
Injection Rate: 1150 gpm @ 1200 psig - Bass Island
470 gpm @ 1700 psig - Mt. Simon

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RECEIVING STREAM: Bass Island limestone horizon, and the Cambrian formation.

The following is a result of the chemical analysis made on the liquid found in the Bass Island limestone formation.

Date	September 25, 1964	
Sp. Gr. @ 25°C	1.0620	
% Calcium Chloride (CaCl ₂)	2.36	23,600 ppm
% Magnesium Chloride (MgCl ₂)	0.67	6,700 ppm
% Ratio CaCl ₂ /MgCl ₂	3.52	
% Sodium Chloride (NaCl)	4.63	46,300 ppm
% Potassium Chloride (KCl)	0.31	3,100 ppm
% Bromine (Br)	0.455	4,550 ppm
% Iodine (I)	0.0005	5 ppm
% Lithium Chloride (LiCl)	0.008	80 ppm
% Strontium Chloride (SrCl ₂)	0.09	900 ppm
Sp. Gr. @ 25/25° C.	1.0620	

DISCUSSION: The information submitted in conjunction with this application has been reviewed by Dr. Grover H. Emrich, Ground Geologist, Stream Quality Section. In his memo dated, 1965, he had stated "It is my opinion that this disposal will not adversely effect the local ground water."

The company has publicized the fact that they are to develop a second deep well for the disposal of spent sulfite liquors. There have been no protests made, to our knowledge, in regard to the proposed disposal of this addition.

When the company publicized the fact that they were developing the first well (application #363110) a received from the American Chloride Company, McKee Erie County. For additional information on the details of this protest refer to the Regional Sanitary E report for permit No. 363110.

The original proposal from the company stated that they would drill four (4) deep wells in order to dispose of the spent sulfite liquors. Since the original proposal was made, the company found that they could collect the waste in a more concentrated form, and, therefore, the well capacity needed was reduced. Upon injection testing of Well No. 2, it was found that the capacity of this well was greater than Well No. 1.

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Hammermill has indicated that if additional well capacity is needed, additional wells will be developed. The company is presently producing 390 tons/day of finished paper, and is presently undergoing and will complete by the summer of 1965 certain internal changes in the operation of their paper mill. These changes will allow the company to reuse approximately 33% of the 6.2 mgd discharged from this mill. This reuse will change the quality and quantity of the waste being discharged. It is, therefore, not possible to determine if the discharge from this mill is in compliance with the Sanitary Water Board rules and regulations.

In January, 1960, a new wood room went into operation. This has greatly reduced the volume, solids, and B.O.D. of the wood room effluent. As previously mentioned, the wood room effluent is discharged into the paper mill sedimentation tanks and the quantity and quality of the paper mill effluent is being changed, it is not possible at the present time to predict the quality and quantity of the combined discharge.

As previously discussed, many changes are to be made in the quality of the spent sulfite liquors within the next 6 months. Upon conversion of the Conifracel pulping process to the Neutrancel pulping process it is estimated that approximately 75% of the spent sulfite liquor will be disposed of by the company's two deep wells. (Assuming that the amount of waste produced in proportion to the tons of pulp produced.)

It is expected that this 75% reduction in the pulp liquor discharge will reduce, to some degree, the foaming and color characteristic of the final discharge. However, until the waste is actually removed and the effect on the final discharge scrutinized, the extent of improvement cannot be determined.

In regard to the organic load from the pulping operation, the pulp standards set forth in the Board's rules and regulations do not pertain, since this semi-chemical type operation is not included in the standards. We are planning to require the company to supply us with regular analyses from their operations after this proposed well is placed in operation in order to determine whether sufficient pollution removal is being accomplished.

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Based on the satisfactory operation of Well No. 1 and its pretreatment facilities, we feel that Well No. 2 will perform satisfactorily.

RECOMMENDATIONS: Permit issuance.

✓ Standard Conditions - (Industrial Wastes, January 1, 1941)
1, 2, 3, 6, 7, 8, 10, 13, 14, 15, and 17.

Special Conditions -

- ✓ A. "HWM" - Accidental discharge
- B. The approval herein granted is predicated upon the claims made by the permittee's designing engineers in the data supporting the application as to the containment of the wastes in the strata specified. Should the wastes migrate from the specified strata, the permittee upon notice from the Board, shall cease the operation of the waste disposal facility.
- C. Within six months after the herein approved waste disposal facility is constructed and placed in operation, the permittee shall submit to the Secretary of Health, Harrisburg, Pennsylvania, evidence of the efficiency and adequacy of such facility.

Respectfully Submitted,

Michael L. Rodavick
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Sanitary Engineer II
Region III

APPROVED:

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MLR/dj

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